09/967062 Notice of Allowability	Application No. 09/967,062	Applicant(s) ALLRED ET AL.	
	Examiner Lun-See Lao	Art Unit 2643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *09-01-2004*.

2. ☒ The allowed claim(s) is/are *10 and 14*.

3. ☒ The drawings filed on *25 January 2002* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DUC NGUYEN
PRIMARY EXAMINER

DETAILED ACTION

Introduction

1. This action is response to amendment filed on 09-01-2004. Claims 1-9, 12-13 and 16-20 have been cancelled. Claims 10-11 and 14-15 are pending.

Examiner's Amendment

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

3. Authorization for this examiner's amendment was given in a telephone interview with Attorney Robert D. Marshall, Jr, on December –16- 2004.

4 The application has been amended as follows:

Claim 10 (currently amended) A method for generating digital filter coefficients for tuning a hearing aid employing digital audio processing to enhance hearing ability of an individual comprising:

fitting said hearing aid to said individual;

connecting said hearing aid to a source of audio digital signals; providing said individual with a device to generate indication

signals at will;

generating and providing a first series of audio digital signals to said hearing aid, each digital signal in said first series of signals corresponding to an analog audio signal

having a selected frequency and multiple power levels; at said hearing aid converting each of said series of digital signals into said corresponding analog audio signal;

receiving said indication signal during said generation of a signal of a selected frequency indicative of said individual hearing said selected frequency

providing a digital audio processing unit in said hearing aid for processing received audio digital signals corresponding to analog audio signals and providing processed audio digital data, including applying digital audio filters for tuning said hearing aid characterized by generating digital filter coefficients in algorithms applied to said received audio digital signals to effect said digital audio filters;

providing a digital computer connected to receive said first series of audio digital signals and said indication signals to generate digital data representative of said individual's hearing ability using said hearing aid without filters determined from said first series of digital signals, said computer programmed to determine said digital filter coefficients for digital filters for tuning said hearing aid and providing said coefficients to said digital audio processing unit in said hearing aid; and

said digital computer is programmed to determine said digital filter coefficients by

providing second digital data for a tolerance range for a target response curve ability of representative of said individual's enhanced hearing ability of sound level versus frequency;

providing first digital data representative of an initial response curve of said individual's hearing ability of sound level versus frequency;

comparing said second digital data to said first digital data and determining whether said response curve is within said tolerance range; and

if said response curve is not within said tolerance range,

iteratively generating digital filter coefficients controlling center frequency, filter bandwidth and amplitude for a succession of additional digital audio filters,

applying digital audio filters determined by said digital filter coefficients to said first digital data to generate third digital data for a compensated response curve, and

automatically optimizing said digital filter coefficients by optimizing the center frequency, amplitude and filter bandwidth of said digital audio filters until said compensated response curve is within said tolerance range or a predetermined limit on the number of digital audio filters has been reached, whichever occurs first.

Claim 14. (currently amended) An apparatus for generating digital filter coefficients for tuning a hearing aid digital audio processing for use by an individual comprising:

a source of first audio digital data corresponding to analog audio signals having a selected frequency and multiple power levels;

a digital audio processing unit in said hearing aid for processing said first audio digital data according to at least one digital filter having digital filter coefficients controlling filter center frequency, amplitude and filter bandwidth and providing processed audio digital data, including applying digital audio filters for tuning said

hearing aid characterized by coefficients in algorithms applied to said first audio digital data to effect said digital audio filters

a digital to analog converter receiving said processed digital data from said digital audio processing unit and converting said processed digital data into a corresponding analog audio signal;

a speaker receiving said analog audio signal from said digital to analog converter and producing corresponding sound to the individual;

a device for generating indication signals indicative of said individual receiving aid sound; and

a digital computer connected to receive said first audio digital data and said indication signals, said digital computer programmed to determine said digital filter coefficients for digital filters for tuning said hearing aid and provide said coefficients to said digital audio processing unit; and

said digital computer is programmed to generate second digital data representative of said individual hearing ability when using said hearing aid without filters determined from said first audio digital data and said indication signals and to determine said coefficients by

providing third digital data for a tolerance range for a target response curve of enhanced hearing of sound level versus frequency;

providing said second digital data, wherein said second digital data represents an initial response curve of hearing ability of sound level versus frequency;

comparing said third digital data to said second digital data and determining whether said initial response curve is within said tolerance range; and

if said initial response curve is not within said tolerance range

iteratively generating digital filter coefficients controlling center frequency, filter bandwidth and amplitude for a succession of additional digital audio filters,

applying digital audio filters determined by said digital filter coefficients to said second digital data to generate fourth digital data for a compensated response curve, and

automatically optimizing said digital filter coefficients by optimizing the center frequency, amplitude and filter bandwidth of said digital audio filters until said compensated response curve is within said tolerance range or a predetermined limit on the number of digital audio filters has been reached, whichever occurs first.

5. Claims 11 and 15 have been cancelled.

Allowable Subject Matter

6. Claims 10 and 14 are allowed.

Conclusion

7. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao, Lun-See whose telephone number is (703) 305-2259 The examiner can normally be reached on Monday-Friday from 8:00 to 6:30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (703) 305-4708.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (703) 306-0377.

Lao, Lun-See
Patent Examiner
US Patent and Trademark Office
Crystal Park 2
(703305-2259

DUC NGUYEN
PRIMARY EXAMINER